

What is claimed is:

1. A vacuum heat insulator comprising:

a laminate bag, and an insulating core placed in said laminate bag,

wherein an inside of said laminate bag is evacuated to vacuum,

said laminate bag is made of a laminate film,

said laminate film includes a support layer, a deposition layer evaporated on the surface of the support layer, a protective layer placed at the surface side of the deposition layer, and a seal layer placed at the back side of the deposition layer,

said deposition layer is formed of at least one material of metal and metal oxide, and

said laminate film has at least one feature selected from the group consisting of:

(i) said support layer has a plastic film having a glass transition point of 87°C or higher,

(ii) said protective layer has a plastic film having a glass transition point of 87°C or higher,

(iii) said deposition layer has a property of transmitting high frequency magnetic field, and

(iv) said laminate bag has a seal portion formed by junction of the seal layer, and the laminate film further as a metal foil

placed at a position excluding the seal portion.

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2. A vacuum heat insulator comprising:
a laminate bag, and an insulating core placed in said
laminate bag.

wherein an inside of said laminate bag is evacuated to
vacuum,

said laminate bag is made of a laminate film,

said laminate film includes a support layer and a deposition
layer evaporating at least one of metal and metal oxide, and

said support layer has a plastic film having a glass
transition point of 87°C or higher.

3. The vacuum heat insulator of claim 2, wherein said
plastic film includes at least one of polyethylene
terephthalate and polyphenylene sulfide.

4. The vacuum heat insulator of claim 2, wherein said
plastic film includes at least one of polycarbonate and
polyimide.

5. The vacuum heat insulator of claim 2, being used as an
insulator for a hot insulating device.

6. The vacuum heat insulator of claim 2, being used as an

insulator for an electric water heater.

7. A vacuum heat insulator comprising:

a laminate bag, and an insulating core placed in said laminate bag,

wherein an inside of said laminate bag is evacuated to vacuum,

said laminate bag is made of a laminate film,

said laminate film includes a first support layer, a first deposition layer evaporated on said first support layer, a second support layer, and a second deposition layer evaporated on said second support layer,

each one of said first deposition layer and second deposition layer has at least one of metal and metal oxide, and

each one of said first support layer and second support layer has a plastic film having a glass transition point of 87°C or higher,

8. The vacuum heat insulator of claim 7, wherein the surface of the first deposition layer and the surface of the second deposition layer are mutually adhered to each other.

9. The vacuum heat insulator of claim 7, wherein said plastic film includes at least one of polyethylene terephthalate and polyphenylene sulfide.

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10. The vacuum heat insulator of claim 7, wherein said plastic film includes at least one of polycarbonate and polyimide.

11. The vacuum heat insulator of claim 7, being used as an insulator for a hot insulating device.

12. The vacuum heat insulator of claim 7, being used as an insulator for an electric water heater.

13. A vacuum heat insulator comprising:
a laminate bag, and an insulating core placed in said laminate bag,

wherein an inside of said laminate bag is evacuated to vacuum,

said laminate bag is made of a laminate film,

said laminate film includes a support layer, a deposition layer evaporating at least one of metal and metal oxide, and a protective layer disposed at the surface side of said deposition layer, and

said protective layer has a plastic film having a glass transition point of 87°C or higher.

14. The vacuum heat insulator of claim 13, wherein said

support layer has a plastic film having a glass transition point of 87°C or higher.

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15. The vacuum heat insulator of claim 13, wherein said plastic film includes at least one of polyethylene terephthalate and polyphenylene sulfide.

16. The vacuum heat insulator of claim 13, wherein said plastic film includes at least one of polycarbonate and polyimide.

17. The vacuum heat insulator of claim 13, being used as an insulator for a hot insulating device.

18. The vacuum heat insulator of claim 13, being used as an insulator for an electric water heater.

19. A vacuum heat insulator comprising:
a laminate bag, and an insulating core placed in said laminate bag,

wherein an inside of said laminate bag is evacuated to vacuum,

said laminate bag is made of a laminate film,

said laminate film includes a base material layer, a deposition layer evaporated on said base material layer, a metal

foil, and a seal layer.

said laminate bag as a seal portion positioned at the end of said laminate film,

said seal portion is formed by bonding of said seal layer, and

said metal foil is positioned at a position excluding at least a part of said seal portion.

20. The vacuum heat insulator of claim 19, wherein said deposition layer has an aluminum deposition layer, and said metal foil has an aluminum foil.

21. The vacuum heat insulator of claim 19, wherein said base material layer has a polyethylene terephthalate resin.

22. The vacuum heat insulator of claim 19, wherein said base material layer has a first base material layer and a second base material layer,

said deposition layer has a first deposition layer and a second deposition layer, and

said first deposition layer and second deposition layer are adhered face to face.

23. The vacuum heat insulator of claim 19, wherein said metal foil is formed into a specified shape by etching.

24. The vacuum heat insulator of claim 19, wherein said deposition layer evaporated on said base material layer, metal foil, and seal layer are mutually laminated and bonded.

25. The vacuum heat insulator of claim 19, wherein said metal foil is disposed between said deposition layer and seal layer.

26. The vacuum heat insulator of claim 22, wherein said metal foil is laminated between said first deposition layer and second deposition layer.

27. The vacuum heat insulator of claim 19, wherein said base material layer and deposition layer are laminated between said metal foil and seal layer.

28. The vacuum heat insulator of claim 19, being used as an insulator for a hot insulating device.

29. The vacuum heat insulator of claim 19, being used as an insulator for an electric water heater.

30. A vacuum heat insulator comprising:
a laminate bag, and an insulating core placed in said

laminated bag,

wherein an inside of said laminated bag is evacuated to vacuum,

said laminated bag is made of a laminated film,

said laminated film includes a gas barrier layer, a protective layer for protecting said gas barrier layer, and a seal layer, and

said gas barrier layer has a metal having a thermal conductivity of 100 W/m·K or less at 300K.

31. The vacuum heat insulator of claim 30, wherein said metal has such a ductility as not to form pin hole in rolled state.

32. The vacuum heat insulator of claim 30, wherein said metal has a permeable property of high frequency magnetic field.

33. The vacuum heat insulator of claim 30, wherein said metal has a metal foil.

34. The vacuum heat insulator of claim 30, wherein said metal has a stainless steel foil of 50 μm or less in thickness.

35. The vacuum heat insulator of claim 30, wherein said metal has at least one stainless steel selected from the group

consisting of SUS430, SUS304, SUS301, and SUS316.

36. The vacuum heat insulator of claim 30, wherein said metal has a titanium foil of 50 μ m or less in thickness.

37. The vacuum heat insulator of claim 30, wherein said protective layer has at least one selected from the group consisting of polyethylene terephthalate, polyethylene naphthalate, polyimide, and polyphenyl sulfide.

38. The vacuum heat insulator of claim 30, being used as an insulator for a hot insulating device.

39. The vacuum heat insulator of claim 30, being used as an insulator for an electric water heater.

40. A vacuum heat insulator comprising:
a laminate bag, and an insulating core placed in said laminate bag,

wherein an inside of said laminate bag is evacuated to vacuum,

said laminate bag is made of a laminate film,

said laminate film includes a gas barrier layer, a protective layer for protecting said gas barrier layer, and a seal layer,

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carrier layer has at least one material, and
material has a permeable property of h.
vacuum heat insulator of claim 40,
has a stainless steel foil of 50 μm
vacuum heat insulator of claim 40,
has at least one stainless steel sele
ng of SUS430, SUS304, SUS301, and
vacuum heat insulator of claim 40,
has a titanium foil of 50 μm or less
vacuum heat insulator of claim 40,
layer has at least one selected fr
F polyethylene terephthalate,
polyimide, and polyphenyl sulfide.
vacuum heat insulator of claim 40,
for a hot insulating device.
vacuum heat insulator of claim 40,

carrier layer has at least one material, and
material has a permeable property of h.
vacuum heat insulator of claim 40,
has a stainless steel foil of 50 μm
vacuum heat insulator of claim 40,
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has a titanium foil of 50 μm or less
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polyimide, and polyphenyl sulfide.
vacuum heat insulator of claim 40,
for a hot insulating device.
vacuum heat insulator of claim 40,

carrier layer has at least one material, and
material has a permeable property of h.
vacuum heat insulator of claim 40,
has a stainless steel foil of 50 μm
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has at least one stainless steel sele
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vacuum heat insulator of claim 40,
has a titanium foil of 50 μm or less
vacuum heat insulator of claim 40,
layer has at least one selected fr
F polyethylene terephthalate,
polyimide, and polyphenyl sulfide.
vacuum heat insulator of claim 40,
for a hot insulating device.
vacuum heat insulator of claim 40,

carrier layer has at least one material, and
material has a permeable property of h.
vacuum heat insulator of claim 40,
has a stainless steel foil of 50 μm
vacuum heat insulator of claim 40,
has at least one stainless steel sele
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vacuum heat insulator of claim 40,
has a titanium foil of 50 μm or less
vacuum heat insulator of claim 40,
layer has at least one selected fr
F polyethylene terephthalate,
polyimide, and polyphenyl sulfide.
vacuum heat insulator of claim 40,
for a hot insulating device.
vacuum heat insulator of claim 40,

carrier layer has at least one material, and
material has a permeable property of h.
vacuum heat insulator of claim 40,
has a stainless steel foil of 50 μm
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vacuum heat insulator of claim 40,
has a titanium foil of 50 μm or less
vacuum heat insulator of claim 40,
layer has at least one selected fr
F polyethylene terephthalate,
polyimide, and polyphenyl sulfide.
vacuum heat insulator of claim 40,
for a hot insulating device.
vacuum heat insulator of claim 40,

carrier layer has at least one material, and
material has a permeable property of h.
vacuum heat insulator of claim 40,
has a stainless steel foil of 50 μm
vacuum heat insulator of claim 40,
has at least one stainless steel sele
ng of SUS430, SUS304, SUS301, and
vacuum heat insulator of claim 40,
has a titanium foil of 50 μm or less
vacuum heat insulator of claim 40,
layer has at least one selected fr
F polyethylene terephthalate,
polyimide, and polyphenyl sulfide.
vacuum heat insulator of claim 40,
for a hot insulating device.
vacuum heat insulator of claim 40,

an insulator for an electric water heater.

47. A hot insulating device comprising:

a container for containing the object to be kept hot, and
a vacuum heat insulator disposed outside of said container,
wherein said vacuum heat insulator includes a laminate bag,
and an insulating core placed in said laminate bag,
an inside of said laminate bag is evacuated to vacuum,
said laminate bag is made of a laminate film, and
said laminate film includes a gas barrier layer, a
protective layer for protecting said gas barrier layer, and a
seal layer.

48. The hot insulting device of claim 47, wherein said
vacuum heat insulator is disposed at the outside of at least
one of the group consisting of the circumference, lid and bottom
of said container.

49. The hot insulting device of claim 47, wherein said
vacuum heat insulator has a permeable property of high frequency
magnetic field.

50. The hot insulting device of claim 47, wherein said gas
barrier layer has an aluminum deposition layer.

51. The hot insulting device of claim 47, wherein said gas barrier layer has a deposition layer of inorganic compound.

52. The hot insulting device of claim 47, wherein said gas barrier layer has a plastic having a glass transition point of 100°C or higher and a deposition layer evaporated on the surface of said plastic.

53. The hot insulting device of claim 47, wherein said container is formed of a material containing a heat-sensitive metal.

54. The hot insulting device of claim 47, wherein said gas barrier layer has at least one stainless steel selected from the group consisting of SUS430, SUS304, SUS301, and SUS316.

55. The vacuum heat insulator of claim 47, wherein said gas barrier layer has a titanium foil of 50 μm or less in thickness.

56. The vacuum heat insulator of claim 47, wherein said protective layer has at least one selected from the group consisting of polyethylene terephthalate, polyethylene naphthalate, polyimide, and polyphenyl sulfide.

57. An electric water heater comprising:

a container for containing liquid, a heater for heating said liquid, a tapping route for discharging water, and a vacuum heat insulator disposed around said container,

wherein said vacuum heat insulator comprises a laminate bag, and an insulating core placed in said laminate bag,

an inside of said laminate bag is evacuated to vacuum,

said laminate bag is made of a laminate film, and

said laminate film includes a base material layer, a deposition layer evaporated on the surface of said base material layer, a protective layer disposed at the face side, and a seal layer disposed at the back side.

58. The electric water heater of claim 57, wherein said base material layer and protective layer are made of a same plastic material.

59. The electric water heater of claim 57,

wherein said base material layer has a first base material layer and a second base material layer,

said deposition layer has a first deposition layer and a second deposition layer, and

said first deposition layer and second deposition layer are adhered face to face.

60. The electric water heater of claim 57, wherein said laminate film further has a metal foil.

61. The electric water heater of claim 60,
wherein said laminate bag has a seal portion having seal layers mutually fused by heat, and
said metal foil is disposed in a region excluding the seal portion at the end positioned at the container side.

62. The electric water heater of claim 57,
wherein only the laminate film formed at one side of said laminate bag further has a metal foil, and
said vacuum heat insulator is disposed so that the laminate bag side having the metal foil is positioned at the high temperature side.

63. The electric water heater of claim 57, wherein said base material layer has polyethylene naphthalate.

64. The electric water heater of claim 57,
wherein said laminate bag has a seal portion having seal layers mutually fused by heat, and
said seal portion is disposed as being folded to the opposite side of said container.